

**FAA VALIDATION OF
EASA STATE OF DESIGN AIRCRAFT ENGINES
TYPE VALIDATION PRINCIPLES AGREEMENT
POTENTIAL VALIDATION ITEMS & STANDARDS DIFFERENCE LIST**

**RECIPROCATING ENGINES
14 CFR Part 33 Amendment 33 compared to CS-E Amendment 3
June 18, 2013**

<u>Item</u>	<u>Subject</u>	<u>FAR Section</u>	<u>Remarks</u>
SSD			
1	General Engine Ratings and Operating Limitations	33.7	CS-E 40 is equivalent except for - 33.7(b)(6) Accessory drive torque and overhang moment. - 33.7(b)(7) Component life. - 33.7(b)(8) Turbosupercharger turbine wheel rpm.
2	Design & Construction General Durability	33.19(b)	CS-E 180/440 are not equivalent requirements.
3	Design & Construction General Turbine, Compressor, Fan, and Turbosupercharger Rotors	33.27	CS-E 80(d) is not an equivalent requirement (however, CS-E 840 is harmonized with 33.27)
4	Design & Construction General Engine Control Systems	33.28	CS-E 50 is equivalent except for the 33.28(f)(2) requires electronic overspeed protection include the means to check it at least once per engine start/stop cycle.
5	Design & Construction General Instrument Connection	33.29	CS-E 60/210 are equivalent except for - 33.29(a) requires marking connections unless the design assures correct connections. - 33.29(f) System Safety Assessment includes the possibility and effect of incorrect fit of instruments, sensors, or connectors. The applicant must also take design precautions to prevent incorrect configuration of the system.
6	Design & Construction Reciprocating Engine, Turbocharger Rotors	33.34	CS-E 80 is equivalent except that all compressor or turbine fragments must be contained.
7	Design & Construction Reciprocating Engine, Lubrication System	33.39(a)	CS-E 270 does not address lube system design for attitude and operating conditions (note that CS-E 570(a)(1) includes this requirement for turbine engines).
8	Design & Construction Reciprocating Engine, Lubrication System	33.39(c)	No equivalent requirement.

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SSD			
9	Block Tests Reciprocating engine, Vibration Test	33.43	CS-E 330/340 are equivalent except for - the vibration test requires using the same propeller load used during the endurance test. - all engine output shafts are must be loaded.
10	Block Tests Reciprocating Engines, Endurance Test	33.49	CS-E 140/300/440 are equivalent except that there are no equivalent requirements for helicopter engines as required by 33.49(d), (e).
Non-SSD			
1	Design & Construction General Durability	33.19(a)	CS-E 25(c) seeks to minimize the development of unsafe conditions between overhaul periods via ICA requirements.
2	Design & Construction Reciprocating Engine, Fuel Induction System	33.35	CS-E 50/230/250/E210 are equivalent except that 33.35(e) requires control of injected fluids.
3	Block Tests Reciprocating Engines, Teardown Inspection	33.55	CS-E 140/440 are equivalent except for CS-E 140 (a) requires the test engine to be sufficiently representative of the type design, whereas 33.55(c) requires conformity to the type design.
<u>Item</u>	<u>Subject</u>	<u>FAR Section</u>	<u>Remarks</u>
Generic VI			
1	Existing Policies and Emerging Issues	Part 33	Various existing policies and other new and emerging issues may be identified as Generic VI.

Notes:

- 1) The above noted items are generic potential VI's based on regulation text differences between the identified airworthiness codes. Interpretive material differences did not affect these findings, and are therefore not referenced.
- 2) For individual projects, some of these VI's may be deleted or additional VI's may be added dependent upon familiarization with the actual product design, certification basis and specific Methods of Compliance.
- 3) This list can also be applied to projects with certification bases corresponding to Part 33 Amendment 31, 32 and CS-E Amendment 2.

Approved by: Original Signed by Robert Ganley, June 28, 2013
Manager, Engine and Propeller Directorate Standards Staff (ANE-110)

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